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TOBACCO COMPOSITION AND METHOD OF MINIMIZING THE IRRITATING PROPERTIES OF TOBACCO

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This invention relates to a method of minimizing certain undesirable effects of tobacco and to improved tobacco products and method of producing the same.

It is generally recognized that part of the irritating properties of tobacco are due to resins and tars present in the tobacco or formed during the burning thereof.

I have found that poly N-vinyl pyrrolidone, hereinafter generally referred to as polyvinyl pyrrolidone, a water soluble polymer described in U. S. Patent No. 2,265,450, issued December 9, 1941, and obtainable by polymerization of N-vinyl- α -pyrrolidone, has the property of combining with tars and resins present in tobacco and materially minimizing many irritating effects of the tobacco, in the case of chewing tobacco and snuff minimizing the irritating effects of the tobacco itself and in the case of smoking tobaccos (cigars, cigarettes and pipe tobaccos) minimizing the amounts of tars and resins or thermal decomposition or combustion products thereof contained in the smoke.

In the case of tobaccos intended for smoking, I have found that by passing the smoke through a filter containing polyvinyl pyrrolidone, either the polymer, itself, insolubilized gels of the polymer (of the type described in copending application of Calvin E. Schildknecht, Serial No. 214,012, now matured as U. S. Patent No. 2,658,045, issued November 3, 1953, obtained by treating a solution of polyvinyl pyrrolidone with any inorganic persulfate) or a filter medium comprising a porous material such as paper or cotton fibers, impregnated or coated with polyvinyl pyrrolidone, a substantial amount of resins or tars present in the smoke are absorbed so that the amount thereof in smoke coming from the filter is substantially decreased.

I have also found that by applying a small amount of polyvinyl pyrrolidone to tobacco, either in the leaf at any stage of its processing before or after it is ground or cut, polyvinyl pyrrolidone appears to combine with the resins and tars present therein so that in the case of chewing tobacco and snuff the irritating properties of the tobacco are substantially minimized and in the case of tobacco intended for smoking in pipes, cigarettes or cigars, the amount of tars and resins and also nicotine in the smoke from tobacco containing a small amount of polyvinyl pyrrolidone, the irritational properties of the smoke are substantially minimized.

The polyvinyl pyrrolidone may advantageously be incorporated in the tobacco by spraying an aqueous solution of polyvinyl pyrrolidone on the tobacco, either in the leaf or after it has been cut.

Example I

A cut smoking tobacco was sprayed with ten per cent aqueous solution of polyvinyl pyrrolidone having a Fikentscher "K" value (as determined with a 1% aqueous solution of the polymer) of about 25, (100 cc. of spray solution being used per pound of tobacco). The tobacco was then allowed to dry. A portion of the treated tobacco was rolled into cigarettes. On smoking these cig-

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arettes, and also on smoking a portion of the treated tobacco in a pipe, no effect on the taste and burning qualities of the tobacco was noticed. Cigarettes made from the thus treated tobacco were also smoked in a cigarette smoking machine and a portion of the thus treated tobacco was smoked in a pipe smoking machine; in both cases it was found that the amount of resins and tars in smoke of the treated tobacco was substantially less than that from the smoke of the same tobacco which had not been treated with polyvinyl pyrrolidone. At the same time the presence of the polyvinyl pyrrolidone did not appear to exert any influence on the burning properties of the tobacco.

Example II

400 grams of tobacco, obtained by opening commercial cigarettes, were divided into four 100-gram batches. One, two, and four grams of dry, finely powdered polyvinyl pyrrolidone, having a K value of about 30, were thoroughly mixed with three of these batches, respectively. Each batch was then remade into cigarettes and the remade cigarettes smoked.

Example III

Commercial cigarette tobacco was remade into cigarettes having a hollow tip. Powdered polyvinyl pyrrolidone was placed in this hollow and held in place with a tiny piece of cotton. In certain of the cigarettes 10 mg. of polyvinyl pyrrolidone per cigarette was added, while in others 20 mg. per cigarette was added and in still others, 40 mg. per cigarette was added. These cigarettes were then smoked.

Example IV

One, two and four-gram quantities of polyvinyl pyrrolidone in the form of a ten per cent solution in isopropyl alcohol were sprayed upon three 100-gram batches of cigarettes, respectively. The tobacco was air-dried, leaving a fine film of polyvinyl pyrrolidone over the tobacco. The drying was effected with care in a moist atmosphere so that there was a minimum loss of the natural moisture of the tobacco. The thus treated batches of tobacco were remade into cigarettes along with a fourth batch of untreated tobacco of the same source. The thus obtained cigarettes were then compared by smoking.

All the cigarettes obtained in Examples II and IV which had been treated with polyvinyl pyrrolidone or which contained polyvinyl pyrrolidone filter were considerably milder than the cigarettes made from untreated tobacco of the same source, those obtained by the method of Examples II and IV, being superior to those obtained by the method of Example III and those obtained by the method of Example IV being superior to those of Example II.

In comparing the cigarettes obtained by the methods of Examples II and IV, it was found that those containing two per cent polyvinyl pyrrolidone were significantly improved over those containing one per cent polyvinyl pyrrolidone. The use of the higher four per cent polyvinyl pyrrolidone, particularly in the cigarettes obtained by the method of Example IV, does not appear to be necessary since there was no increase in effectiveness at this level.

It will be understood that the foregoing examples are illustrative of the present invention and that various modifications may be made therein.

Due to the relatively high cost of polyvinyl pyrrolidone, it is generally preferable to employ the minimum amount thereof which is necessary to effect the desired decrease in irritational properties of the tobacco or the smoke therefrom. Such amount may vary with various types of tobacco and with the method in which the polyvinyl pyrrolidone is incorporated in the tobacco. The optimum amount can, however, be determined by preliminary tests.

It will also be understood that the polyvinyl pyrrolidone may be added to the tobacco at any stage of its processing,

either before, during or after curing, and advantageously may be added along with other common additives to tobacco, such as humectants (glycerine or glycol), flavoring materials, or chlorophyll and its derivatives especially chlorophyllin (i. e., water soluble chlorophyll factors). By incorporating the polyvinyl pyrrolidone with tobacco along with some other usual additive, the processing is reduced to a minimum.

It also appears that the degree of polymerization of the polyvinyl pyrrolidone does not substantially affect its ability to combine with tars and resins in tobacco and minimize the amount thereof in smoke from the tobacco. It is contemplated that water soluble polymers of polyvinyl pyrrolidone generally may be used in practicing the present invention (i. e., polymers having a degree of polymerization evidenced by Fikentscher K value of 10 to 90). While polyvinyl pyrrolidone having a K value above 90 still combines with the tars and resins in tobacco, such high polymers are somewhat difficultly soluble, and therefore are not so conveniently applied to tobacco in practicing the invention. Polyvinyl pyrrolidone having a molecular weight within the range of about 5,000 to 40,000 with an average molecular weight of about 25,000 and a K value of about 30 has been used substantially as a blood plasma substitute. Polymers of this type may be used in practicing the present invention. However, it appears that batches of polymers having a lower or higher K value than that suitable for certain pharmaceutical applications are equally effective for use in accordance with this invention and such low or high polymerization may therefore be used, if desired.

I claim:

1. Tobacco containing a minor amount of polyvinyl pyrrolidone.
2. The method of minimizing the irritating properties of tobacco smoke which comprises contacting such smoke with polymeric N-vinyl pyrrolidone.
3. A cigarette wherein the tobacco contains a minor amount of polyvinylpyrrolidone.
4. A cigar wherein the tobacco contains a minor amount of polyvinylpyrrolidone.
5. In a cigarette having a filter, the improvement in the filter which comprises the presence therein of an effective amount of polyvinylpyrrolidone.
6. A filter for tobacco smoke, said filter containing an effective amount of polyvinylpyrrolidone.

References Cited in the file of this patent

UNITED STATES PATENTS

160,138	Appleby	Feb. 23, 1875
1,507,925	Marshall	Sept. 9, 1924

FOREIGN PATENTS

11,419	Great Britain	1902
680,788	Great Britain	Oct. 8, 1952

OTHER REFERENCES

- Products Pharmaceutiques, vol. 4, No. 9, pages 397 to 403, inclusive.
 Products Pharmaceutiques, vol. 4, No. 8, Aug. 1949, pages 350-356.